

CORRESPONDENCE

A new species of genus *Phraortes* Stål and the first description of female *P. corniformis* Chen & He from China (Phasmatodea: Phasmatidae)

Wai-Chun George Ho

Hong Kong Entomological Society, P.O. Box No.73749, Kowloon Central Post Office, Hong Kong, China, E-mail: georgehwc@hotmail.com

Abstract A new species, *Phraortes lii* **sp. nov.**, from Guangxi, China, is described and illustrated. The female of *P. corniformis* Chen & He, 1993 is firstly described. The examined material including types and non-types are deposited in Hong Kong Entomological Society, Hong Kong, China.

Key words Lonchodinae, *Phraortes*, new species, China.

The genus *Phraortes* Stål, 1875 is distributed over China, Japan, Korea and Vietnam (Shiraki, 1935; Kwon *et al.*, 1992; Otte & Brock, 2005; Chen & He, 2008; Hennemann *et al.*, 2008; Saito, 2015). The major revisionary work on the genus was provided by Chen and He (2008). The present author recently collected some *Phraortes* specimens from Mao'ershan, Guangxi, China, identified a new species, *P. lii* **sp. nov.** and discovered the female of *P. corniformis* Chen & He, 1993. Both sexes of these species are described and illustrated in this study. Consequently, 35 species of *Phraortes* are recognised in China (Chen & He, 2008; Hennemann *et al.*, 2008; Ho, 2013).

The examined material including the types and non-types were dried and pinned after the collecting trip. All measurements are given in millimetres (mm). The types and non-types are deposited in the Hong Kong Entomological Society, Hong Kong, China.

Genus *Phraortes* Stål, 1875

Phraortes Stål, 1875: 8, 64. Type-species: *Phasma elongata* Thunberg, 1815: 299 (= *Phraortes elongatus*), by original designation.

Diagnosis. Body cylindrical and slender, covered with indistinct and small granules. Head oval, usually with a pair of granules, horns or spines between compound eyes in female, usually unarmed in male. Thorax covered with dense and small granules. Abdomen cylindrical. Female with distinct supra-anal plate, seventh sternum with praeopercular organ on posterior margin. Male anal segment dilated and swollen. Cerci small in female, elongated and incurved in male. Legs slender, lacking distinct armature. Mesofemora thick-built. Female with serrate or spinose elevation near apices of ventral carinae of mesofemora and metafemora. Male legs lacking distinct armature. Apterous.

Distribution. China, Japan, Korea, Vietnam.

Phraortes corniformis Chen & He, 1993 (Figs 1–2, 7–8)

Phraortes corniformis Chen & He, 1993: 41.

Material examined. 9♂4♀, China, Guangxi, Xing'an, Mao'ershan, 22 July 2012, coll. Wai-Chun George Ho.

Diagnosis. This species is similar to *Phraortes lii* **sp. nov.** but can be separated by parallel-sided anal abdominal

urn:lsid:zoobank.org:pub:7F179F9D-311F-4293-83CC-17B5C2E021B0

Received 26 February 2016, accepted 5 July 2016

Executive editor: Fuqiang Chen

segment in male and dorsoventrally flattened praeopercular organ on seventh abdominal sternum in female.

Male. General colour of body and legs brown. Body slender, sparsely granulated. Head covered with inconspicuous granulation. Oblong, longer than pronotum. Vertex flat, with a small oval depression between antennal bases. Occiput flat, with indistinct median furrow, posterior margin with 6 small swellings. Compound eyes small and rounded, about 3 times as long as genae. Between compound eyes with a pair of flattened oval elevations. Antennae filiform, projecting over apices of forelegs, covered with sparse bristles; scapus cylindrical, flattened basally, about 2 times as long as pedicellus; third segment as long as pedicellus. Thorax covered with minute granules, prothorax with less granules than mesothorax and metathorax. Pronotum rectangular, anterior and posterior margins truncate, longitudinal and transverse sulci crossing at middle area, posterior apex of longitudinal sulcus not reaching posterior margin of pronotum. Mesonotum elongated, longer than mesofemora, about 6.6 times as long as pronotum, broadly emarginated medially, with indistinct mediolongitudinal line. Metanotum broadly emarginated medially, shorter than mesofemora, about 6 times as long as median segment. Abdomen covered with minute granules. Median segment nearly square. Second to seventh terga parallel-sided. Second to sixth terga slightly equal in length. Seventh tergum shorter than preceding terga. Eighth tergum gently expanded posteriorly. Ninth tergum longer than eighth tergum. Anal segment split into 2 semi-terga. Semi-terga parallel-sided, apices pointed and curved downwards. Subgenital plate cup-shaped, flattened, posterior margin rounded. Cerci not exposed, cylindrical, apices pointed and curved inwards. Legs slender. All femora thicker than all tibiae. Profemora curved basally, longer than mesonotum, posteroventral carina with 2 small teeth near apex. Mesofemora almost as long as mesotibiae. Anteroventral and posteroventral carinae of mesofemora and metafemora with 2 small teeth near apices. All tibiae unarmed, medioventral carina slightly elevated basally.

Female. General colour of body and legs brown. Body slender, sparsely covered with minute granules. Head oval, longer than pronotum. Vertex flat, with a pair of minute granule-like horns between compound eyes. Occiput flat, with distinct median furrow, lateral furrows indistinct, posterior margin with indistinct swellings. Compound eyes small and rounded, about 4 times as long as genae. Antennae filiform, projecting over apices of forelegs; scapus flattened basally, about 2.5 times as long as pedicellus, 1.5 times as long as third segment; third segment longer than pedicellus. Pronotum with longitudinal and transverse sulci crossing at middle area, anterior margin truncate, posterior margin rounded. Mesonotum longer than metanotum, moderately expanded posteriorly, with distinct mediolongitudinal line. Metanotum shorter than mesofemora. Abdomen cylindrical. Median segment wider than long. Third to sixth terga equal in length. Second tergum shorter than third tergum, as long as seventh tergum. Seventh sternum with a dorsoventrally flattened praeopercular organ on posterior margin, apex rounded. Eighth tergum shorter than seventh tergum, longer than combined length of ninth tergum and anal segment. Anal segment as long as ninth tergum, with a broad V-shaped emargination on posterior margin, posterolateral angles rounded. Supra-anal plate small, with median carina, posterior margin truncate, projecting over posterolateral angles of anal segment. Subgenital plate scoop-shaped, laterally carinate, also with elevated carina medially, posterior margin rounded, projecting over posterior margin of supra-anal plate. Cerci short, tapering posteriorly, apices projecting over posterior margin of supra-anal plate. Legs slender, sparsely covered with dark markings. All femora distinctly thicker than all tibiae. Profemora curved basally, posteroventral carina with a spinose elevation near apex, bearing 2 small spines. Anteroventral and posteroventral carinae of mesofemora and metafemora with a spinose elevation near apices, bearing 2 small spines. Medioventral carina of all tibiae elevated basally. Protarsi with an indistinct lamella.

Measurements. Body length ♂ 82.0–83.0 mm, ♀ 112.0–120.0 mm; antennae ♂ 60.0–61.0 mm, ♀ 53.0–60.0 mm; head ♂ 3.5 mm, ♀ 4.5–5.0 mm; pronotum ♂ 3.0 mm, ♀ 4.0–4.5 mm; mesonotum ♂ 20.0–21.0 mm, ♀ 25.0–27.0 mm; metanotum ♂ 12.0 mm, ♀ 14.5–15.5 mm; median segment ♂ 2.0–2.2 mm, ♀ 3.0 mm; profemora ♂ 22.0–23.2 mm, ♀ 23.5–26.0 mm; mesofemora ♂ 18.0–19.0 mm, ♀ 18.0–19.0 mm; metafemora ♂ 21.0–23.0 mm, ♀ 22.0–23.0 mm; protibiae ♂ 22.0–26.0 mm, ♀ 23.0–26.0 mm; mesotibiae ♂ 17.0–18.0 mm, ♀ 17.0–19.0 mm; metatibiae ♂ 23.0 mm, ♀ 21.0–24.0 mm.

Distribution. China (Guangxi).

Remarks. Chen and He (1993) described this species based on a single male specimen which is wrongly indicated as female in the type data. Therefore, the female is unknown until it is described here. The male is also redescribed.

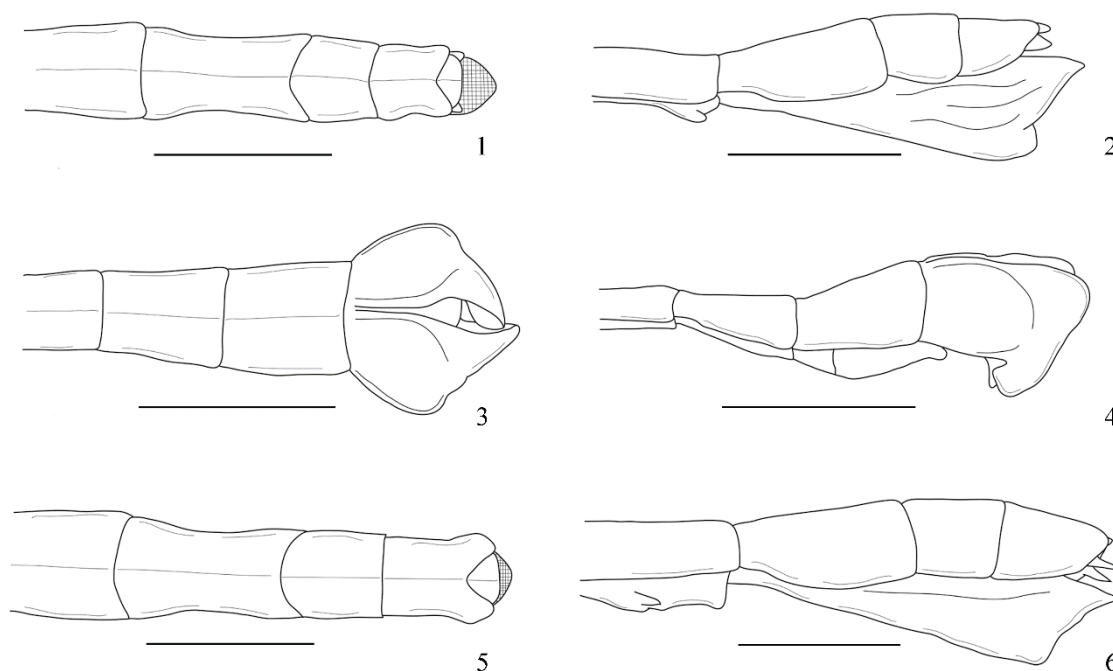
***Phraortes lii* sp. nov.** (Figs 3–6, 9–10)

Holotype ♂, China, Guangxi, Xing'an, Mao'ershan, 700–1000 m, 24 July 2012, coll. Wai-Chun George Ho. Paratype. 1 ♀, same data as holotype.

Diagnosis. This new species is similar to *P. corniformis* Chen & He, 1993 but can be diagnosed by duller colouration, more robust body and indistinct granulation on body in both sexes, laterally swollen anal abdominal segment in male and paired praeopercular organ on seventh abdominal sternum in female.

Male. General colour of body and legs brown. Body slender, inconspicuously granulated. Head sparsely covered with minute granules. Oblong, slightly longer than pronotum. Vertex flat, with a pair of small rounded depressions between antennal bases. Occiput flat, with indistinct median furrow, posterior margin with 6 small swellings. Compound eyes small and rounded, about 2.8 times as long as genae. Between compound eyes with a pair of flattened oval elevations. Antennae filiform, projecting over apices of forelegs, covered with sparse bristles; scapus cylindrical, flattened basally, about 2.2 times as long as pedicellus; third segment as long as pedicellus. Thorax inconspicuously covered with minute granules, prothorax with less granules than mesothorax and metathorax. Pronotum nearly rectangular, anterior and posterior margins truncate, longitudinal and transverse sulci crossing at middle area, posterior apex of longitudinal sulcus not reaching posterior margin of pronotum. Mesonotum elongated, longer than mesofemora, about 6.3 times as long as pronotum, broadly emarginated medially, with faint mediolongitudinal line. Metanotum shorter than mesofemora, about 3.8 times as long as median segment. Abdomen inconspicuously covered with minute granules. Median segment nearly square. Second to seventh terga parallel-sided. Second to sixth terga slightly equal in length. Seventh tergum shorter than preceding terga. Eighth tergum moderately expanded posteriorly. Ninth tergum longer than eighth tergum. Anal segment deeply split into 2 semi-terga. Semi-terga swollen laterally, tapering posteriorly, apices rounded and curved inwards. Subgenital plate cup-shaped, flattened, posterior margin truncate. Cerci not exposed, cylindrical, apices pointed and slightly curved inwards. Legs slender. All femora thicker than corresponding tibiae. Profemora curved basally, longer than mesonotum, posteroventral carina with 2 small teeth near apex. Mesofemora as long as mesotibiae. Anteroventral and posteroventral carinae of mesofemora and metafemora with 2 small teeth near apices. All tibiae unarmed.

Female. Body more robust and larger than male. General colour of body and legs brown. Body slender, inconspicuously covered with minute granules. Head oval, longer than pronotum. Vertex flat, with a pair of minute granule-like horns between compound eyes. Occiput flat, with distinct median furrow, lateral furrows indistinct, posterior margin with indistinct swellings. Compound eyes small and rounded, about 4.5 times as long as genae. Antennae filiform, projecting over apices of forelegs; scapus flattened basally, about 2 times as long as pedicellus, 1.5 times as long as third segment; third segment slightly longer than pedicellus. Pronotum with longitudinal and transverse sulci crossing at middle area, anterior margin slightly curved inwards, posterior margin nearly truncate. Mesonotum about 6.3 times as long as pronotum, moderately expanded posteriorly, with distinct mediolongitudinal line. Metanotum shorter than mesofemora, about 4.3 times as long as median segment. Abdomen cylindrical. Median segment wider than long. Third to fifth terga and seventh terga equal in length. Sixth tergum the longest. Seventh sternum with a pair of spine-like praeopercular organ posteriorly, apices pointing



Figures 1–6. *Phraortes* spp. 1–2. *P. corniformis* Chen & He, 1993. 3–6. *P. lii* sp. nov. 1. Female end of abdomen, dorsal view. 2. Female end of abdomen, lateral view. 3. Male end of abdomen, dorsal view. 4. Male end of abdomen, lateral view. 5. Female end of abdomen, dorsal view. 6. Female end of abdomen, lateral view. Scale bars = 5 mm.

posteriorly. Eighth tergum longer than ninth tergum. Anal segment slightly as long as ninth tergum, with deep V-shaped emargination on posterior margin, posterolateral angles obtuse. Supra-anal plate small, posterior margin rounded, slightly projecting over posterolateral angles of anal segment. Subgenital plate scoop-shaped, with lateral carinae, posterior margin rounded, projecting over posterior margin of supra-anal plate. Cerci short, tapering posteriorly, apices projecting over posterior margin of supra-anal plate. Legs slender. All femora distinctly thicker than all tibiae. Profemora as long as mesonotum, posteroventral carina with a spinose elevation near apex, bearing 2 small spines. Anteroventral and posteroventral carinae of mesofemora and metafemora with a spinose elevation near apices, bearing 2 small spines. Medioventral carina of all tibiae elevated basally. Protarsi with an indistinct lamella.

Measurements. Body length ♂ 84.0 mm, ♀ 115.0 mm; antennae ♂ 58.0 mm, ♀ 58.0 mm; head ♂ 4.0 mm, ♀ 6.0 mm; pronotum ♂ 3.0 mm, ♀ 4.0 mm; mesonotum ♂ 19.0 mm, ♀ 25.0 mm; metanotum ♂ 11.5 mm, ♀ 15.0 mm; median segment ♂ 3.0 mm, ♀ 3.5 mm; profemora ♂ 23.0 mm, ♀ 25.0 mm; mesofemora ♂ 16.0 mm, ♀ 17.0 mm; metafemora ♂ 21.0 mm, ♀ 20.0 mm; protibiae ♂ 24.0 mm, ♀ 24.0 mm; mesotibiae ♂ 16.0 mm, ♀ 16.0 mm; metatibiae ♂ 22.0 mm, ♀ 20.0 mm.

Distribution. China (Guangxi).

Remarks. This species is found in evergreen broadleaf forests between 700 and 1000 metres.

Etymology. This species is named in honour of Prof. Lizhen Li (Shanghai) for his contributions to the entomology of China.



Figures 7–10. *Phraortes* spp. 7–8. *P. corniformis* Chen & He, 1993. 9–10. *P. lii* sp. nov. 7, 9. Male habitus. 8, 10. Female habitus. Scale bars = 5 mm.

Discussion

This paper provides descriptions of one new species, *Phraortes lii* sp. nov., and both sexes of *P. corniformis* Chen & He, 1993. *Phraortes* Stål, 1875 is a speciose genus and China has the greatest diversity of species from this genus. Guangxi is the area having the highest number of *Phraortes* species in China. However, some species were described only based on single male or female specimen and their generic placements are questionable. Further specimens, in particular corresponding to the unknown sex collected from the type-locality are necessary to confirm their taxonomic status.

Acknowledgements My special thanks go to Wenxuan Bi, Jiayao Hu, Xiaobin Song and Jianqing Zhu, Shanghai for their kind assistance and friendship during the collecting trip in Mao'ershan and staff of Maoershan Nature Reserve, Guangxi for their assistance. I also wish to deeply thank the Beijing Forestry University for giving access to the corresponding collection.

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